

heat treating said amorphous silicon film by laser annealing, therein forming a polycrystalline silicon film;

forming an impurity region in said polycrystalline silicon film; and

rapidly heat treating said impurity region by rapid thermal annealing using a light source emitting sheet-type annealing light, therein activating said impurity region.

61. (New) The method of fabricating a semiconductor device in accordance with claim 60, further comprising a step of forming an insulating film of 1000 to 6000 Å in thickness on said substrate and forming said amorphous silicon film on said insulating film.

BI 62. (New) The method of fabricating a semiconductor device in accordance with claim 60, wherein a xenon arc lamp is employed in said light source.

63. (New) The method of fabricating a semiconductor device in accordance with claim 60, wherein said rapidly heat treating step comprises a step of preparing said light source by arranging a pair of lamps vertically opposed to each other, and carrying said substrate so as to pass between said pair of lamps.

64. (New) The method of fabricating a semiconductor device in accordance with claim 60, wherein said rapid thermal annealing is performed a plurality of times.

65. (New) The method of fabricating a semiconductor device in accordance with claim 60, wherein the heating temperature is increased stepwise from an initial time to a final time.

66. (New) A method of fabricating a semiconductor device, comprising the steps of:

forming an amorphous silicon film on a substrate;

heat treating said amorphous silicon film by laser annealing performed by applying a laser beam in the form of a sheet, therein forming a polycrystalline silicon film;

forming an impurity region in said polycrystalline silicon film; and

rapidly heat treating said impurity region by rapid thermal annealing using a light source emitting sheet-type annealing light, therein activating said impurity region.

67. (new) The method of fabricating a semiconductor device in accordance with claim 66, further comprising a step of forming an insulating film of 1000 to 6000 Å in thickness on said substrate and forming said amorphous silicon film on said insulating film.

68. (New) The method of fabricating a semiconductor device in accordance with claim 66, wherein a xenon arc lamp is employed in said light source.